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		Filing Date	March 1, 2002					
	TRANSMITTAL FORM	First Named Inventor	Xiaodong Huang					
. 6	to be used for all сопеѕропдепсе during pendency of filed application)	Group Art Unit Number	Xiaodong Huang CHA SEP					
		Examiner Name	Not Yet Known					
Т	otal Number of Pages in This Submission 11*	Attorney Docket Number	Not Yet Known 22920-06460 ER					
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APPLICANTS:

Xiaodong Huang, Andreas Stintz, Kevin Malloy, Guangtian Liu,

Luke Lester & Julian Chent

APPLICATION NO.:

10/087,408

FILING DATE:

March 1, 2002

TITLE:

Quantum Dot Vertical Cavity Surface Emitting Laser

EXAMINER:

Not Yet Known

GROUP ART UNIT:

2881

ATTY. DKT. NO.:

22920-06460

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INFORMATION DISCLOSURE STATEMENT Under 37 CFR §§ 1.56 and 1.97-98

SIR:

Pursuant to the provisions of 37 CFR §§ 1.56 and 1.97-98, enclosed herewith is modified form PTO-1449 listing references for consideration by the Examiner. Enclosed is a copy of each listed reference that may be material to the examination of this application, and for which there may be a duty to disclose. The references enclosed with this Information Disclosure Statement are not cumulative.

The filing of this Information Disclosure Statement shall not be construed as a representation regarding the completeness of the list of references, or that inclusion of a reference in this list is an admission that it is prior art or is pertinent to this application, or that a search has been made, or as an admission that the information listed is, or may be considered to be, material to patentability, or that no other material information exists, and shall not be construed as an admission against interest in any manner.

This Information Disclosure Statement is being filed:

within three months of the filing date of the application, or date of entry Ø into the national stage of an international application, or before the mailing date of a first office action on the merits, whichever event last occurred;

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			Respectfully submitted,
	,		Xiaodong Huang et al.
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Patent and Trademark Office INFORMATION DISCLOSURE CITATION

(Use several sheets if necessary)

Sheet 1 of 7 Attomey's Docket No. Serial No. 22920-06460 10/087,408

Applicant:

Xiaodong Huang et al.

Filing Date

Group Art Unit

Unassigned

March 1, 2002

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	INFC	RM	ATION DISCLOSURE CITATION	Applicant Xiaodong Huang et al.		
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U.S. DEPARTMENT OF COMMERCE Attorney's Docket No. Serial No.

Serial No.

Patent and Trademark Office

Attorney's Docket No. Serial No. 10/087,408

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PTO-1449



Sheet 4 of 7 FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE Serial No. (REV. 6-89) Patent and Trademark Office 10/087,408 INFORMATION DISCLOSURE CITATION Xiaodong Huang et al. Applicant (Use several sheets if necessary) Filing Date Group Art Unit March 1, 2002 Unassigned OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.) Liu, G.T.; Li, H.; Stintz, A.; Newell, T.C.; Lester, L.F.; and Malloy, K.J.; Modal Gain And To Value Improvements In Quantum Dot Lasers Using Dots-In-A-Well (DWELL) Structure; IEEE 2000 International Semiconductor Laser Conference; pp. 133-134. Liu, G.T.; Stintz, A.; Li, H.; Lester, L.F.; and Malloy, L.F.; Ultra-Low Threshold Current Density Quantum Dot Lasers Using The Dots-In-A-Well (DWELL) Structure; Conference: Physics And Simulation Of Optoelectronic Devices – Conference 8th; Proceedings – SPIE The International Society For Optical Engineering; Vol. 3944; 2000; pp. 814-822. Liu, G.T.; Stintz, A.; Li, H.; Malloy, K.J.; and Lester, L.F.; Extremely Low Room-Temperature Threshold Current Density Diode Lasers Using InAs Dots In Ino.15Gao.85As Quantum Well, Electronics Letters; Vol. 35, No. 14; July 8, 1999. Liu, G.T.; Stintz, A.; Li, H.; Malloy, K.J.; and Lester, L.F.; 1.25 μm Low Threshold Current Density Dots-In-A-Well (DWELL) Lasers; Conference: 1999 Digest Of The LEOS Summer Topical Meetings: Nanostructures And Quantum Dots/WDM Components/VCSELs And Mirocavaties/RF Photonics For CATV And HFC Systems; July 26-30, 1999. Liu, G.T.; Stintz, A.; Li, H.; Newell, T.C.; Gray, A.L.; Varangis, P.M.; Malloy, K.J.; and Lester, L.F.; The Influence Of Quantum-Well Composition On The Performance Of Quantum Dot Lasers Using InAs/InGaAs Dots-In-A-Well (DWELL) Structures; IEEE Journal Of Quantum Electronics, Vol. 36, No. 11; November 2000; pp. 1272-1279. Liu, G.T.; Stintz, A.; Li, H.; Newell, T.C.; Varangis, P.; Malloy, K.J.; and Lester, L.F.; One And Three-Stack Quantum Dot Lasers With Very Low Threshold Current Density, Conference: Conference On Lasers And Electo-Optics (CLEO 2000); 2000; May 2000; pp.346-347. Liu, Guangtian; Characteristics Of Ultralow Threshold Quantum-Dot Lasers Using InAs/InGaAs Dots-In-A-Well Structures; Thesis (Ph.D.); University of New Mexico; Dept. of Electrical And Computer Engineering; December 2000; pp. 1-120. Liu, Guangtian; Very Low Room-Temperature Threshold Current Density Dots In A Well (DWELL) Lasers; Conference: 1999 IEEE LEOS Annual Meeting Conference Proceedings. LEOS'99; 12 Annual Meeting; IEEE Lasers And Electro-Optics Society; November 1999; vol. 2; pp.469-470. Lott, J.A.; Ledentsov, N.N.; Ustimov, V.M.; Maleev, N.A., Zhukov, A.E.; Kovsh, A.R.; Maximov, M.V.; Volovik, B.V.; Alferov, Zh.I.; and Bimberg, D.; InAs-InGaAs Quantum Dot VCSELs On GaAs Substrates Emitting At 1.3μm; Electronics Letters; Vol. 36, No. 16; August 3, 2000. Marciante, John R.; and Agrawal, Govind P.; Spatio-Temporal Characteristics Of Filamentation In Broad-Area Semiconductor Lasers; IEEE Journal Of Quantum Electronics, Vol. 33, No. 7; July 1997; pp. 1174-1179. Maximov, Mikhail V.; Kochnev, Igor V.; Shernyakov, Yuri M.; Zaitsev, Sergei V.; Gordeev, Nikita Yu.; Tsatsul'nikov, Andrew F.; Sakharov, Alexey V.; Krestnikov, Igor L.; Kop'ev, Petr S.; Alferov, Zhores I.; Ledentsov, Nikolai N.; Bimberg, Dieter; Kosogov, Alexander O.; Werner, Peter; and Gosele, Ulrich; InGaAs/GaAs Quantum Dot Lasers With Ultrahigh Characteristic Temperature (T_0 = 385K) Grown By Metal Organic Chemical Vapour Deposition; Jpn. J. Appl. Phys.; Vol. 36, Pt. 1, No. 6B; 1997; pp. 4221-

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Sheet 5 of 7

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Attorney's Docket No. 22920-06460

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Sheet 6 of 7 FORM PTO-1449 U.S. DEPARTMENT OF COMMERCE Attorney's Docket No. Serial No. (REV. 6-89) Patent and Trademark Office 22920-06460 10/087,408 INFORMATION DISCLOSURE CITATION Applicant Xiaodong Huang et al. (Use several sheets if necessary) Filing Date Group Art Unit March 1, 2002 Unassigned OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.) Park, Gyounwon; Shchekin, Oleg B.; Csutak, Sebastian; Huffaker, Diana L.; and Deppe, Dennis G.; Room-Temperature Continuous-Wave Operation Of A Single-Lavered 1.3um Quantum Dot Laser. Applied Physics Letters, Vol. 75, No. 21; November 22, 1999; pp. 3267-3269. Prieto, J.A.; Armelles, G.; Priester, C.; Garcia, J.M.; Gonzalez, L.; and Garcia, R.; Strain-Induced Optical Anisotropy In Self-Organized Quantum Structures At The E1 Transition; Applied Physics Letters; Vol. 76, No. 16; April 17, 2000; pp. 2197-2199. Qiu, Y.; Gogna, P.; Forouhar, S.; Stintz, A.; and Lester, L.F.; High-Performance InAs Quantum Dot Lasers Near 1.3 μm; Applied Physics Letters; Vol. 79, Number 22; November 26, 2001; pp. 3570-3572. Qiu, Y.; Gogna, P.; and Forouhar, S.; High Temperature Continuous Wave Operation Of InAs Quantum Dot Lasers Near 1.3 μm; Conference: IEEE Lasers & Electro-Optics Society; LEOS Conference: November 12-16, 2001; pp. 267-268. Sakaki, Hiroyuki; Quantum Wires, Quantum Boxes And Related Structures; Physics, Device Potentials And Structural Requirements; Surface Science; Vol. 267; 1992; pp.623-629. Shernyakov, Yu.M.; Bedarev, D.A.; Kondrat'eva, E.Yu.; Kop'ev, P.S.; Kovsh; A.R.; Maleev, N.A.; Maximov, M.V.; Mikhrin, S.S.; Tsatsul'nikov, A.F.; Ustinov, V.M.; Volovik, B.V.; Zhukov, A.E.; Alferov, Zh.I.; Ledentsov, N.N.; and Bimberg, D.; 1.3µm GaAs-Based Laser Using Quantum Dots Obtained By Activated Spinodal Decomposition; Electronics Letters; Vol. 35, No. 11; May 27, 1999; pp. 898-900. Shoji, H.; Mukai, K.; Ohtsuka, N.; Sugawara, M.; Uchida, T.; and Ishikawa, H.; Lasing At Three-Dimensionally Quantum-Confined Sublevel Of Self-Organized Ino.5Gao.5As Quantum Dots By Current Injection; IEEE Photonics Technology Letters, Vol. 7, No. 12; December 1995; pp. 1385-1387. Stintz, A.; Liu, G.T.; Gray, A.L.; Spillers, R.; Delgado, S.M.; and Malloy, K.J.; Characterization Of InAs Quantum Dots In Strained In_xGa_{1-x}As Quantum Wells; J.Vac.Sci.Technol.; Vol. B 18(3); May/Jun 2000; pp.1496-1501. Stintz, A.; Liu, G.T.; Li, H.; Lester, L.F.; and Malloy, K.J.; Low-Threshold Current Density 1.3-µm InAs Quantum-Dot Lasers With The Dots-In-A-Well (DWELL) Structure; IEEE Photonics Technology Letters; Vol. 12, No. 6; June 2000; pp. 591-593. Tabuchi, H.; and Ishikawa H.; External Grating Tunable MQW Laser With Wide Tuning Range Of *240nm*; Electronic Letters; Vol. 26, No. 11; May 24, 1990; pp. 742-743. Thomson, J.D.; Herrmann, E.; Summers, H.D.; Smowton, P.M.; and Hopkinson, M.; Temperature Insensitive Quantum Dot Structures For Vertical Cavity Lasers; CLEO 2000 Conference; May 2000; pp. 347-348. Ustinov, V.M.; Maleev, N.A.; Zhukov, A.E.; Kovsh, A.R.; Egorov, A.Yu.; Lunev, A.V.; Volovik, B.V.; Krestnikov, I.L.; Musikhin, Yu.G.; Bert, N.A.; Kop'ev, P.S.; and Alferov, Zh.I.; InAs/InGaAs Quantum Dot Structures On GaAs Substrates Emitting at 1.3µm; Applied Physics Letters; Vol. 74, No. 19; May 10. 1999; pp. 2815-2817. Varangis, P.M.; Li, H.; Liu, G.T.; Newell, T.C.; Stintz; A.; Fuchs, B.; Malloy, K.J.; and Lester, L.F.; Low-Threshold Quantum Dot Lasers With 201nm Tuning Range; Electronics Letters; Vol. 36, No. 18; August 31, 2000. EXAMINER DATE CONSIDERED EXAMINER: Initial if references considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. include copy of this form with next communication to applicant.

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